

535,620

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 June 2004 (10.06.2004)

PCT

(10) International Publication Number
WO 2004/047837 A2

(51) International Patent Classification⁷: **A61K 31/385**,
31/40, 31/4025, 31/403, 31/07, 31/433, 31/4436, 31/5377,
C07D 491/04, 493/04, 495/04, 498/04, 417/12, 417/04,
A61P 9/00, 9/04, 9/06, 9/10, 9/12, 25/30, 27/06

Neve Shalom (IL). **KHAN, Mohamed, Amin** [US/US];
17313 Lotus Way, Morgan Hill, CA 95037 (US).

(21) International Application Number:
PCT/IL2003/000986

(74) Agents: **LUZZATTO, Kfir** et al.; Luzzatto & Luzzatto,
P.O. Box 5352, 84152 Beer Sheva (IL).

(22) International Filing Date:
21 November 2003 (21.11.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/428,502 22 November 2002 (22.11.2002) US
60/428,733 22 November 2002 (22.11.2002) US

(84) Designated States (*regional*): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **YISSUM
RESEARCH DEVELOPMENT COMPANY OF THE
HEBREW UNIVERSITY OF JERUSALEM** [IL/IL]; Hi
Tech Park, Edmond J Safra Campus, Givat Ram, P.O. Box
39135, 91390 Jerusalem (IL).

Published:
— *without international search report and to be republished
upon receipt of that report*

(72) Inventors; and
(75) Inventors/Applicants (*for US only*): **HAJ-YEHIA, Ab-
dullah, Ibrahim** [IL/IL]; House # 47, P.O. Box 168, 99761

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: BETA-BLOCKERS HAVING ANTIOXIDANT AND NO-DONOR ACTIVITY

(57) Abstract: Multifunctional beta-antagonist compounds are provided, that combine β -adrenergic receptor blocking activity with capability to scavenge superoxide and other reactive oxygen species, and that may further function as nitric oxide donors. The compounds are useful for preventing or treating disorders in which the treatment with β -antagonists is indicated, or which are associated with oxidative stress.



WO 2004/047837 A2